

ALLEN&HEATH



Options

VALVE OPTION
DUAL EQ ISOLATOR
CROSSFADER

User Guide

Publication AP5377

XONE:V6 Options User Guide AP5377 Issue 1

Copyright © 2003 Allen & Heath Limited. All rights reserved

Whilst we believe the information in this guide to be reliable we do not assume responsibility for inaccuracies. We also reserve the right to make changes in the interest of further product development.



These products comply with the European Electromagnetic Compatibility directives 89/336/EEC & 92/31/EEC and the European Low Voltage Directives 73/23/EEC & 93/68/EEC.

These products have been tested to EN55103 Parts 1 & 2 1996 for use in Environments E1, E2, E3, and E4 to demonstrate compliance with the protection requirements in the European EMC directive 89/336/EEC. During some tests the specified performance figures of the product were affected. This is considered permissible and the products have been passed as acceptable for their intended use.

Allen & Heath has a strict policy of ensuring all products are tested to the latest safety and EMC standards. Customers requiring more information about EMC and safety issues can contact Allen & Heath.

NOTE: Any changes or modifications to the console or options not approved by Allen & Heath could void the compliance of the console and therefore the users authority to operate it.

ALLEN&HEATH

Manufactured in the United Kingdom
Allen & Heath Limited
Kernick Industrial Estate, Penryn, Cornwall, TR10 9LU, UK

<http://www.allen-heath.com>

Important Note

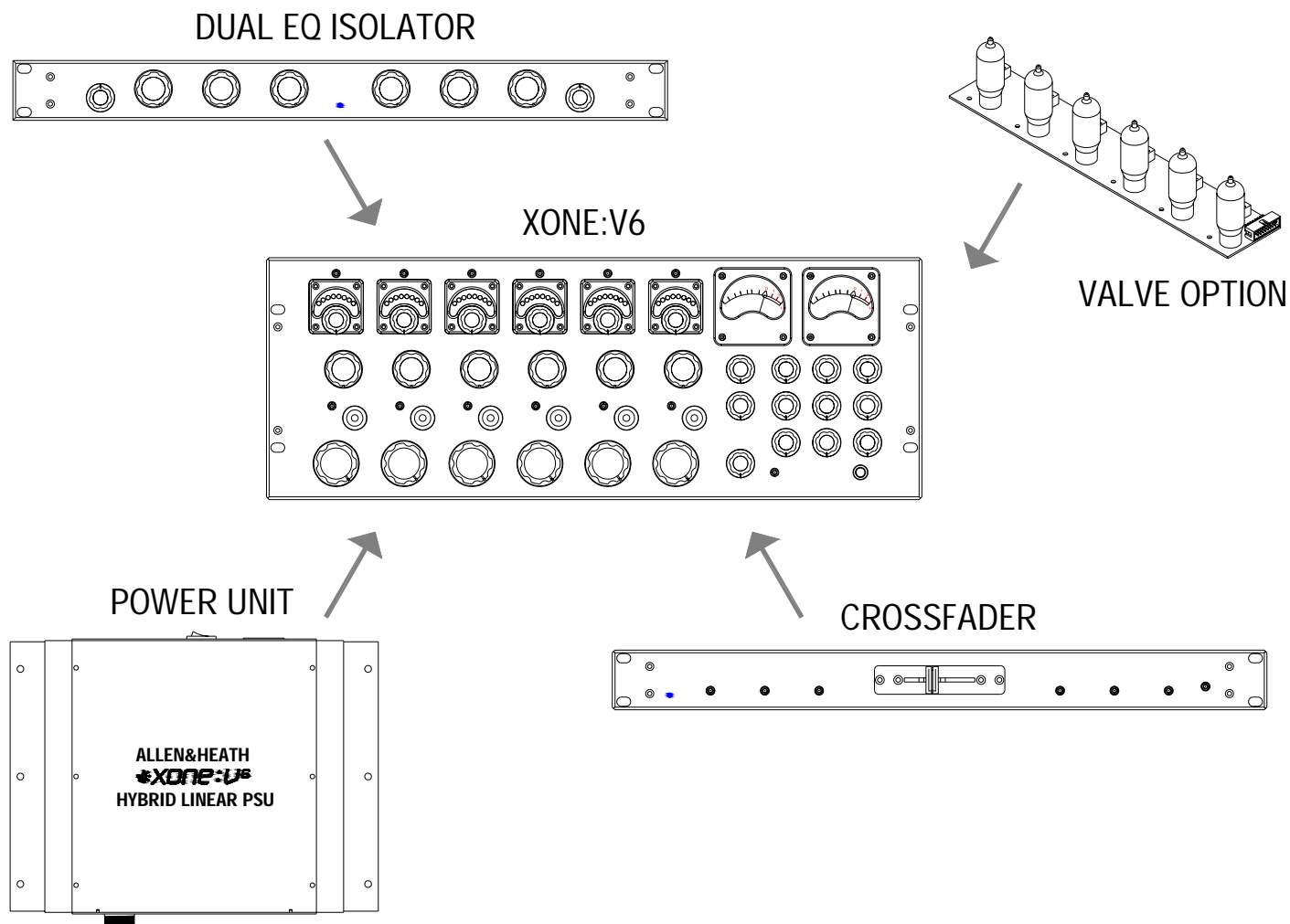
The products described in this user guide are optional add-ons for the **XONE:V6** rotary club mixer. They are only intended for use with the Allen & Heath **XONE:V6**.



Read the Safety Sheet and user guide AP4975 provided with the XONE:V6 console. These contain important information regarding the installation and operation of the equipment and associated power supply unit.

Contents

Welcome	5
Valve Option Overview	6
Dual EQ Isolator Overview	7
Crossfader Overview	8
Servicing the Crossfader	9
Installing the Options - Introduction	11
Installing the Options – READ FIRST	12
Installing the Options – The Cables	13
Installing the Options – Mechanical	15
Connecting the EQ Isolator only	16
Connecting the Crossfader only	17
Connecting both the EQ Isolator and Crossfader	18
Connecting the Options with other Inserted Equipment	19
System Block Diagram	20
Technical Specification – EQ Isolator	22
Technical Specification - Crossfader	25
XONE:V6 Order Codes	26



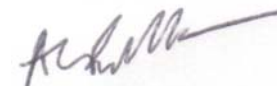
Welcome to the **XONE:V6** Options

The **XONE:V6** audiophile rotary mixer has become established as one of the finest consoles for top clubs and performers, setting a new quality benchmark with its solid, hand crafted construction and the warmth and clarity of its minimum signal path design meticulously created from the finest discrete components.

At your request we have added several user options which extend its performance and capability well beyond that of the traditional rotary mixer whilst ensuring the same high standard of build and sonic quality for which the **XONE:V6** has become renowned.

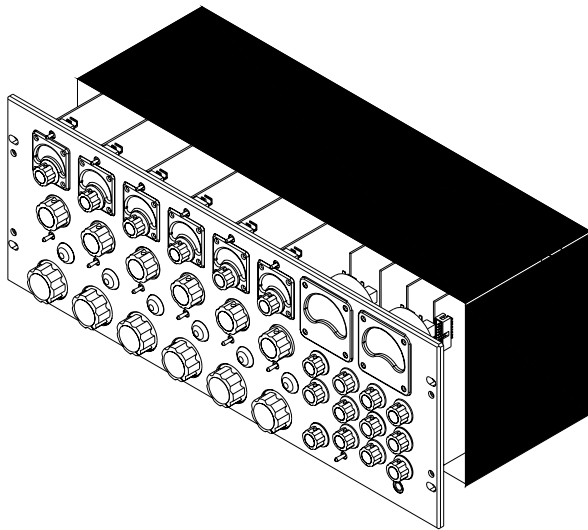
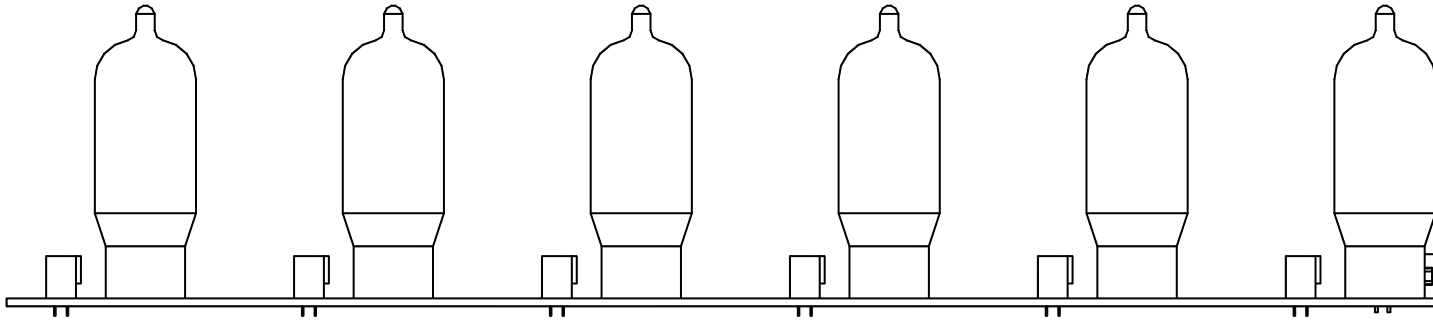
The **XONE:V6** Dual EQ Isolator adds two 3-band equalisers for dramatic frequency cut effects when mixing between tracks. These can be switched into combinations of the six music channels. The **XONE:V6** Crossfader adds the top performance Penny & Giles crossfader to the rotary mixer feature list. These additional modules simply patch into the **XONE:V6** channel inserts using the leads provided. They are powered from the main console power unit. One or both modules may be used together with any other outboard effects and processing devices by chaining them together. A further option is available for users who wish to capture the characteristic valve sound of channels 5 and 6 across all six music channels. The VALVE option card fits into the **XONE:V6** to add the classic ECC82 valve sound to channels 1 to 4 as well.

These options reflect the same vintage feel and styling as the **XONE:V6** console to ensure a well integrated and capable mixing system without compromise. Please take the time to read through this user guide to ensure you get as much pleasure from using the **XONE:V6** suite of components as we had designing it.



Andy Rigby-Jones, the designer

Valve Option Overview

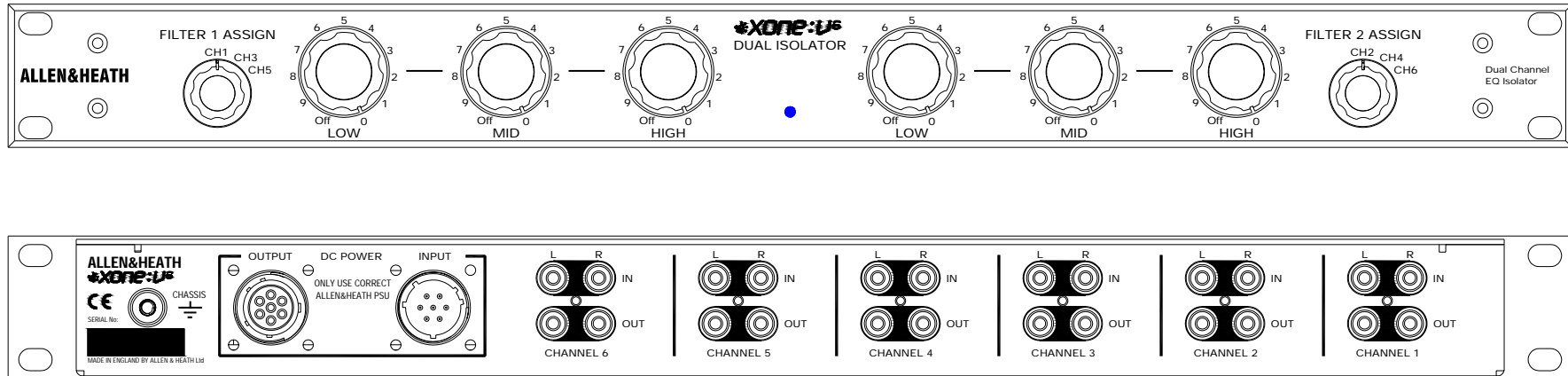


The **XONE:V6** Valve option is a circuit card assembly comprising of a valve (tube) circuit for each of the six **XONE:V6** stereo input channels. It replaces the standard card which provides valve circuits for channels 5 and 6 only. Each becomes an integral part of its corresponding channel pre-amplifier, adding the classic warm, musical sound associated with thermionic valve technology. This enhances the pleasing sounding even harmonics through the characteristically strong second harmonic distortion. The premium grade double triode ECC82 valve is used in a cathode follower configuration. The **XONE:V6** successfully marries the very best of vintage valve design with the latest electronic production technology resulting in a great sounding, solidly built console.

Order code : **XONE:V6-VALVE**

The Valve option is installed by removing the **XONE:V6** cover and replacing one of the internal circuit cards with the new card supplied. For further information refer to fitting instructions AP5295. If you have any queries regarding the supply or fitting of this option please contact Allen & Heath.

Dual EQ Isolator Overview



The dual channel EQ Isolator is a pair of performance filters that dramatically changes the sound of the music by cutting selected bands of frequencies. It is an enhanced version of the 'Kill' switch function found on some DJ mixers, with variable and precise attenuation of the selected frequency range. Two filters are provided, one for odd numbered channels, the other for even. Each has three controllable frequency bands. The DJ can creatively mix two music tracks together using the filters to isolate sounds between the two. For example, the bass line of one track could interact with the highs of another so creating a new and unique performance. The EQ Isolator is patched into the **XONE:V6** channel insert points using the cables provided. It shares the console power unit.

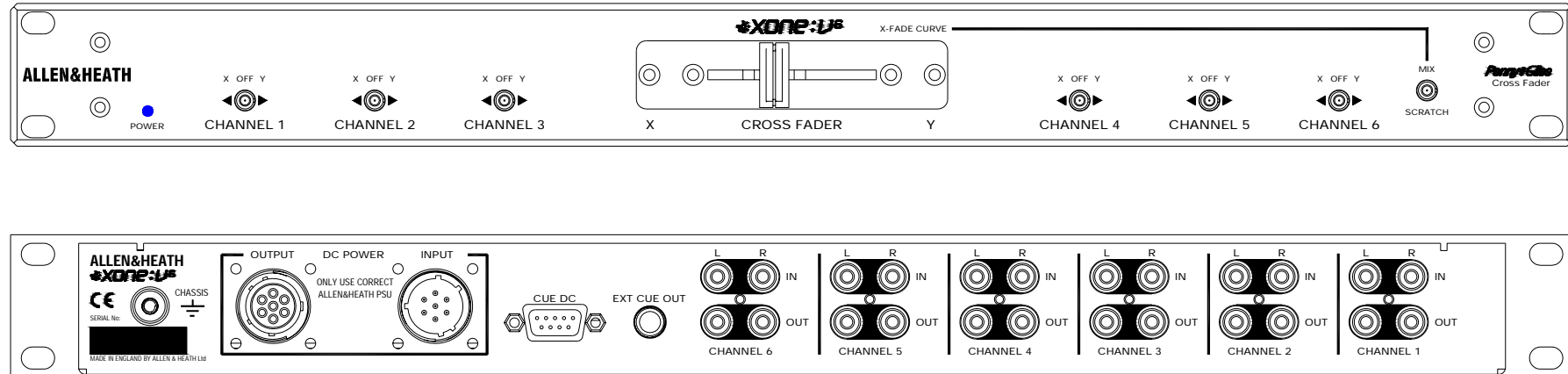
FILTER 1(2) ASSIGN A rotary switch selects the source for each filter. Select channel 1, 3 or 5 to the left filter, channel 2, 4 or 6 to the right filter.

LOW Turn the control anti-clockwise from full '0' to introduce the low frequency cut effect. This balances between the full range sound '0' and steep 3-pole 350Hz low cut filter 'OFF'.

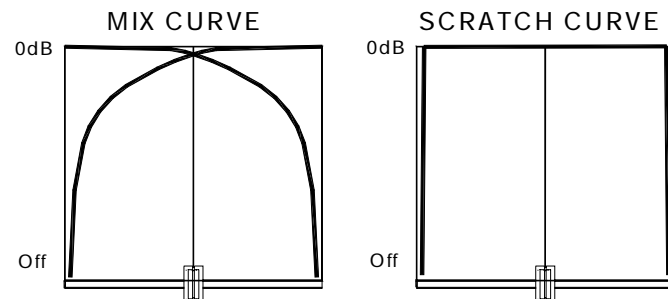
MID Turn the control anti-clockwise from full '0' to introduce the mid frequency cut effect. This balances between the full range sound '0' and a wide 1.2kHz notch filter 'OFF'.

HIGH Turn the control anti-clockwise from full '0' to introduce the high frequency cut effect. This sweeps the high cut filter from 20kHz (full range) to 300Hz 'OFF' (full cut).

Crossfader Overview



The Crossfader option adds fader mixing to the **XONE:V6** rotary mixer. The high quality, precision engineered Penny & Giles fader is used. Switches select each of the music channels to be routed direct to the mix or through the crossfader. The response of the fader can be switched to accommodate different mixing styles. The Crossfader is patched into the **XONE:V6** channel insert points using the cables provided. It shares the console power unit.

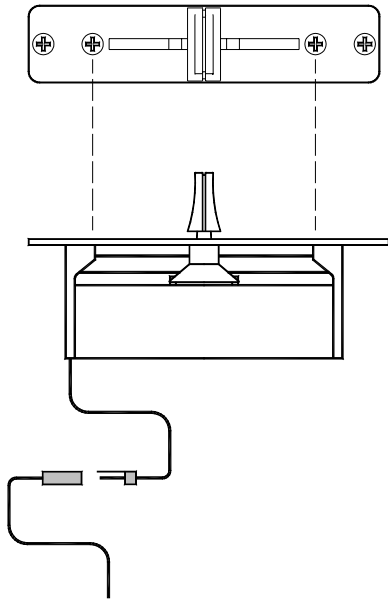


Crossfader The popular DJ performance tool for interacting between two music sources when cut or scratch mixing. This has a very smooth, light action for fast mixing styles. The fader is mounted on its own plate for easy removal for servicing or replacement.

X-OFF-Y assign switches Each of the six music channels has a three position toggle switch to route its signal to the left 'X' side of the crossfader, direct to the mix bypassing the fader, or to the right 'Y' side of the fader. Use these to select which two channels are to be mixed using the crossfader.

MIX/SCRATCH switch Selects the crossfade response curve. 'MIX' selects a progressive mix curve for smoother crossfade mixing. 'SCRATCH' selects a very fast scratch type response. Refer to the response curves printed here.

Crossfader order code : **AI4222**



Servicing the Crossfader

Use a number 2 cross-point (Pozidriv) screwdriver to undo and remove the two outer screws on the crossfader plate. Lift the crossfader assembly out and away from the console panel. Unplug the wiring harness and remove the module. Remove the fader from the plate by undoing the inner screws.

Replace the fader if it has become damaged or worn. Clean it if it has become dirty. Disassemble the fader by removing its side screws. Carefully clean the guide rod and slider assembly by wiping with tissue or cotton bud. If necessary the track may be removed and washed in warm water. Lubricate the guide rod with one drop of silicon oil either side. Wipe away excess oil and reassemble. For more information contact Penny & Giles www.pgcontrols.com

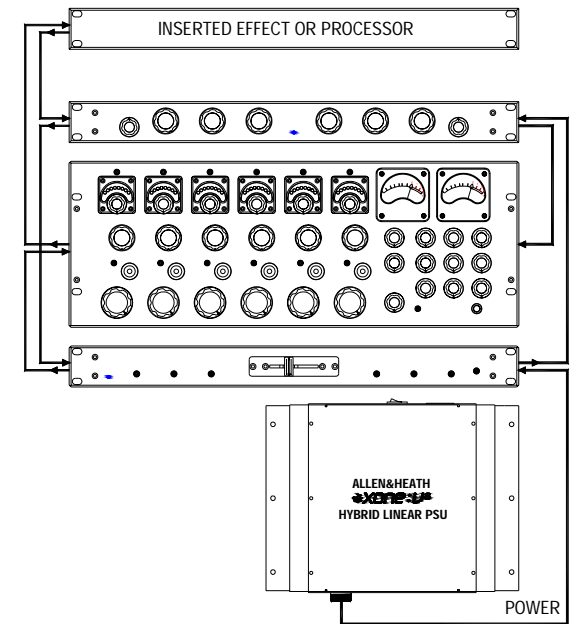
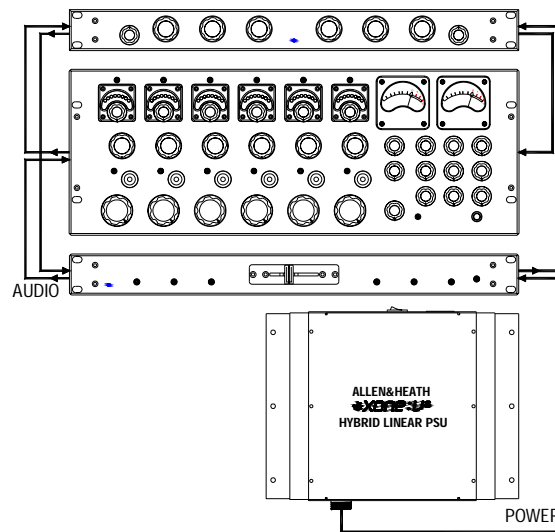
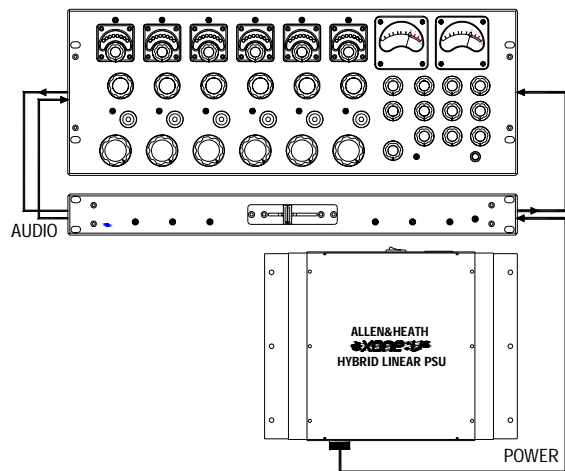
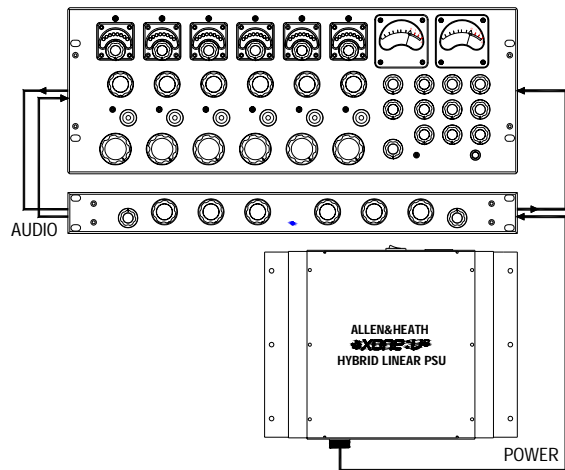
Refit the fader to the face plate using the two shorter M3x5mm screws. Plug in the wiring harness making sure the connector is correctly aligned and seated. Refit the fader module into the console making sure the wire loom is on the left hand side. Secure using the two longer M3x10mm screws.

Crossfader Cue

The Crossfader module includes a Cue DC and audio link that overrides the **XONE:V6** post-insert cue switching to ensure the cue signal is taken pre-crossfader. Make sure the cue link is patched in as described later.

Crossfader Metering

The **XONE:V6** channel meters are post-insert and therefore post-crossfader as standard. If you prefer, the meters can be reconfigured to be pre-insert and therefore pre-crossfader. Note that this would also mean that the pre-inserted effects signals are displayed. The modification involves soldering links on the **XONE:V6** internal circuit cards and should only be carried out by an appointed Allen & Heath service agent. For further information contact Allen & Heath.



Installing the Options – Introduction

The EQ Isolator and Crossfader are optional add-on modules for the **XONE:V6** rotary mixer. They are designed to be plinth or 19" rack mounted in the same way as the **XONE:V6**. Each is a 1U rack height module with similar construction and styling. Mechanical and template details are provided on the following pages. Mounted with the **XONE:V6** the options form a solid and well integrated mixing system.

The diagrams opposite illustrate how the EQ Isolator and Crossfader modules can be used. Full installation and connection details are provided on the following pages. One or both of these modules may be used with the **XONE:V6**. The audio is patched into the **XONE:V6** channel insert sockets. If you are using both modules or already have other equipment such as effects devices and signal processors patched in, then the signal is simply daisy-chained from the insert send through all the equipment and back to the insert return. All six channels should be patched in this way. If included, the Crossfader should be the last in the chain. Two additional cables are required with the Crossfader module to patch into the cue system.

The audio patch cables are provided with the option modules. These include professional grade oxygen-free RCA phono leads that ensure the absolute fidelity of the **Xone:V6** is maintained. Avoid the use of domestic grade cables.

The option modules are powered from the **XONE:V6** power supply unit. DC cables are provided so that the power can be routed through the modules into the console. Note that the equipment and power unit must be correctly installed to ensure reliable operation.

For trouble free installation and operation, and to ensure the high standard of performance to which the **XONE:V6** has been designed, please make sure you read and understand all the notes, recommendations and warnings printed.

Installing the Options – READ FIRST

Before starting, ensure that the **XONE:V6** power unit mains switch is in its off (0) position and that its mains lead and DC power cable are unplugged.



Due to the class A circuit topology, lamps and valves used the **XONE:V6** console can run slightly warm. Do not obstruct the ventilation slots above and below the console. Ensure that there is adequate air flow around the equipment. Rack mounting the options above and below the console will allow sufficient air flow.



It is very important that the power unit is correctly mounted to ensure reliable operation. Read the instructions and warnings printed in the **XONE:V6** user guide AP4975. The power unit must be mounted on a vertical, vibration free surface with adequate air flow around the unit. It must be positioned a minimum of 200mm (8") away from the equipment.



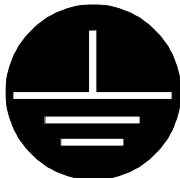
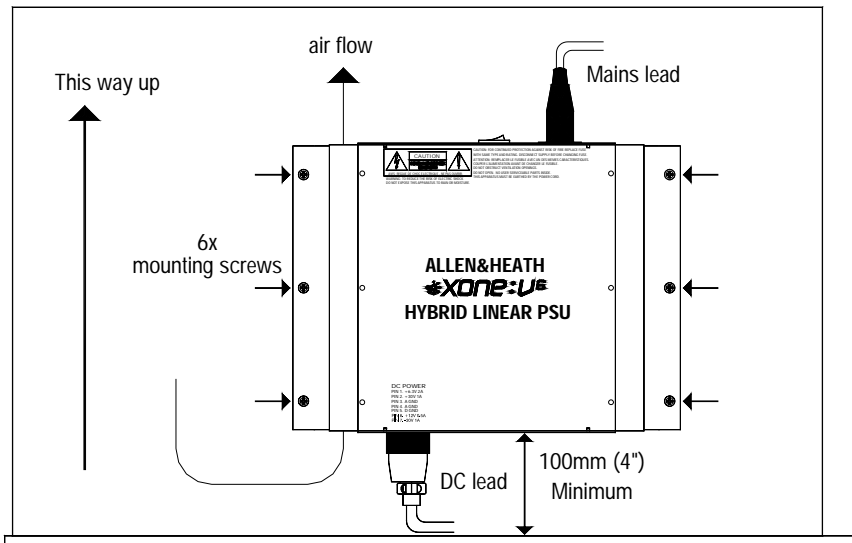
To avoid damage to the internal circuits do not plug in the DC power lead while the power unit is turned on.



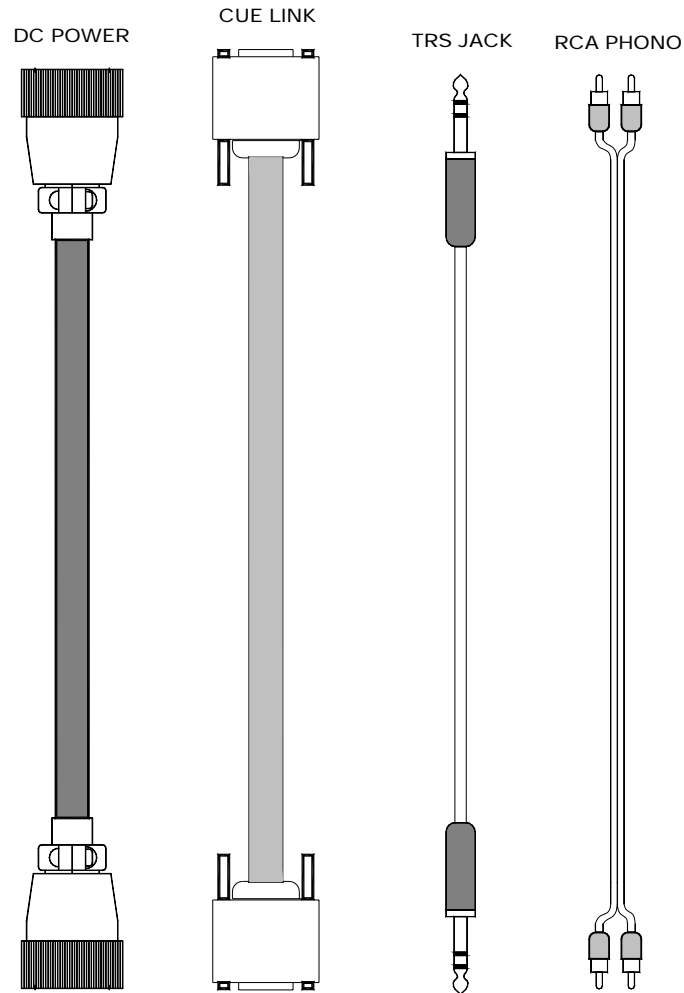
Do not operate the units with their covers removed. Do not drill any fixing holes through the unit covers.



For safety it is important that all equipment grounds are connected to mains ground so that exposed metal parts are prevented from carrying high voltage which can injure or even kill the operator. Check the continuity of the safety ground from all points in the system including microphone bodies, turntable chassis, equipment cases, racks and so on.



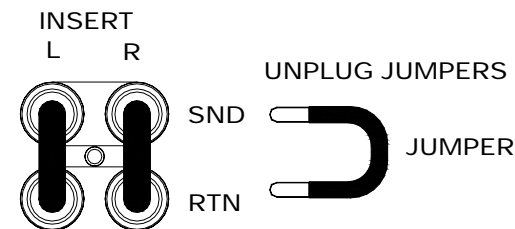
Installing the Options – The Cables



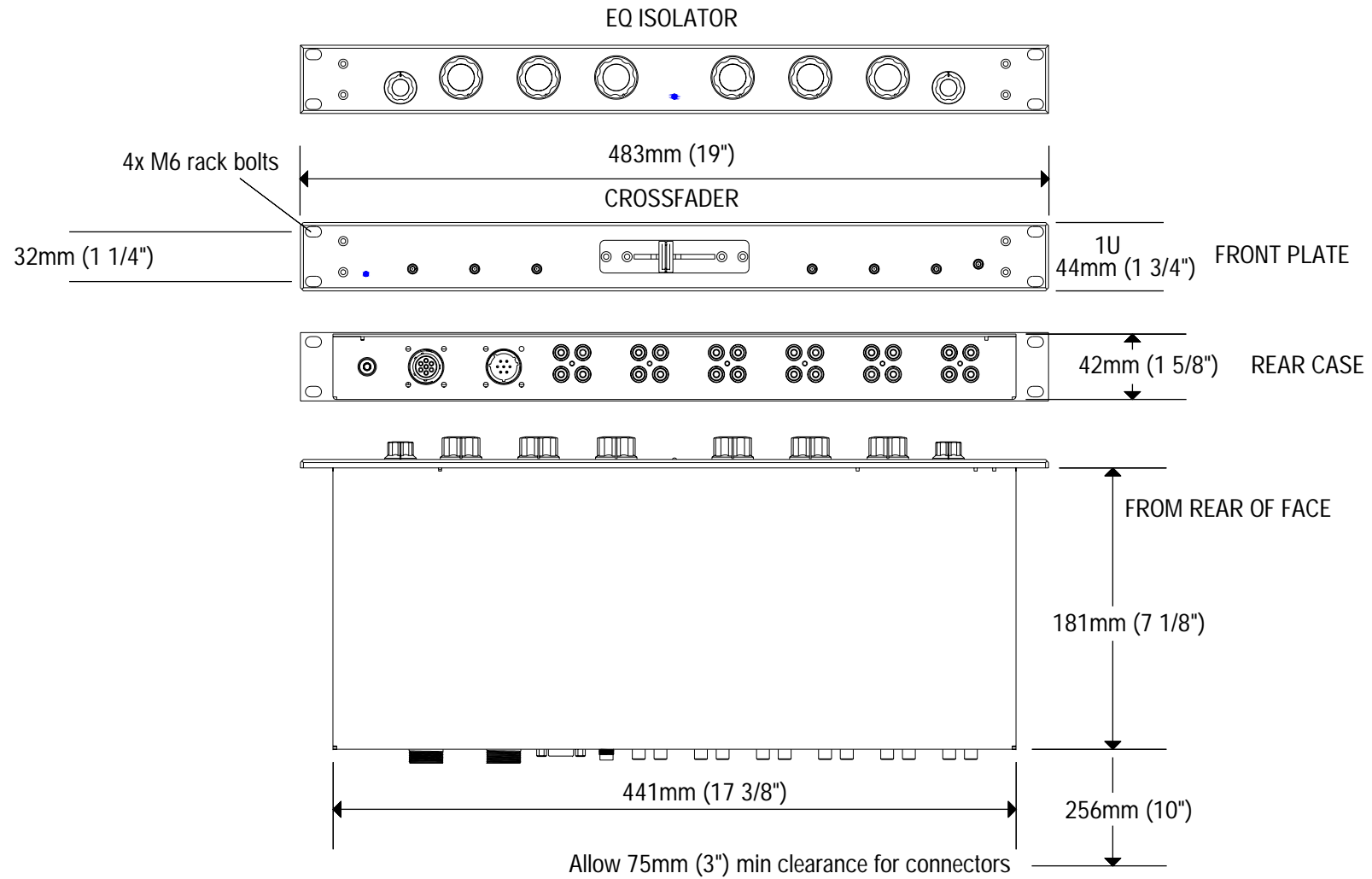
DC power cables The EQ Isolator and Crossfader option modules are each provided with a short 0.5 meter (20") DC power cable. With the power unit switched off, unplug its DC cable from the **XONE:V6** console. Align and replug this into the DC INPUT socket on the first option module. Use the short DC cable to plug from its DC OUTPUT socket into the console or the DC INPUT of the next module if installed. Make sure the locking ring of each plug is tightened. Be careful to avoid cross-threading the locking ring.

RCA phono insert cables You need 12x stereo phono leads if you are installing one option, 18x if you are installing both. Twelve 0.5 meter (20") professional grade, oxygen-free stereo RCA phono leads are provided with each module to ensure the best sonic performance. Avoid the use of cheap, domestic grade cables.

The audio cables patch into the **XONE:V6** channel inserts. Unplug the jumper plugs if these are fitted. Keep them in a safe place for future use.



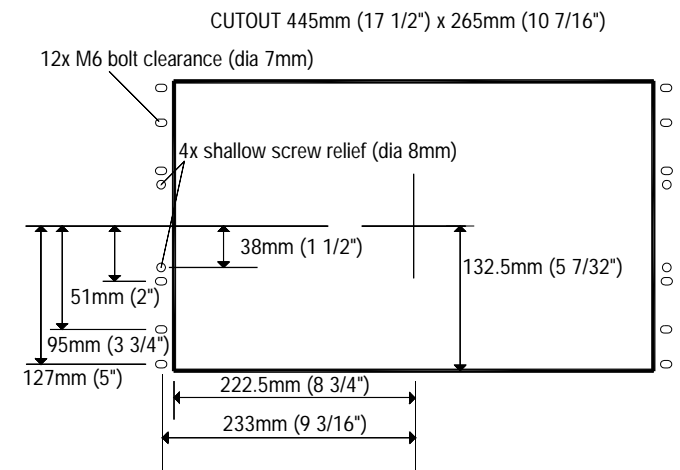
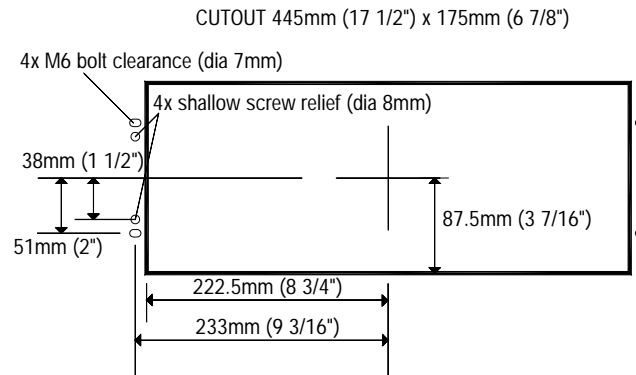
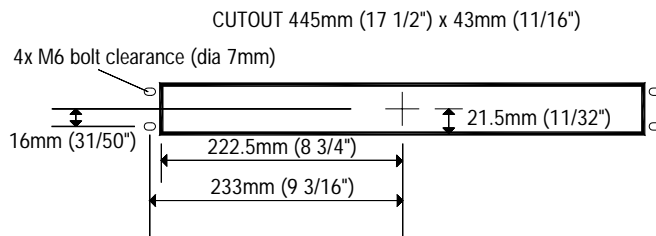
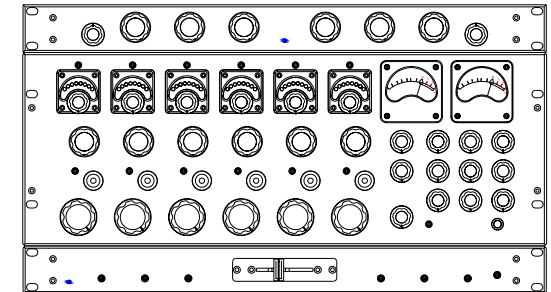
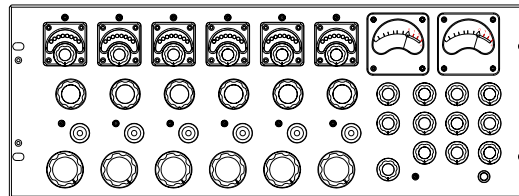
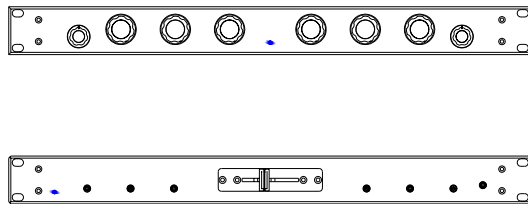
Crossfader cue system cables The Crossfader option requires one 9-pin 'D' type DC link cable and one TRS (3-pole, stereo) jack audio cable to patch its cue system into the **XONE:V6** console. These are provided with the module. Do not use a 2-pole mono lead.



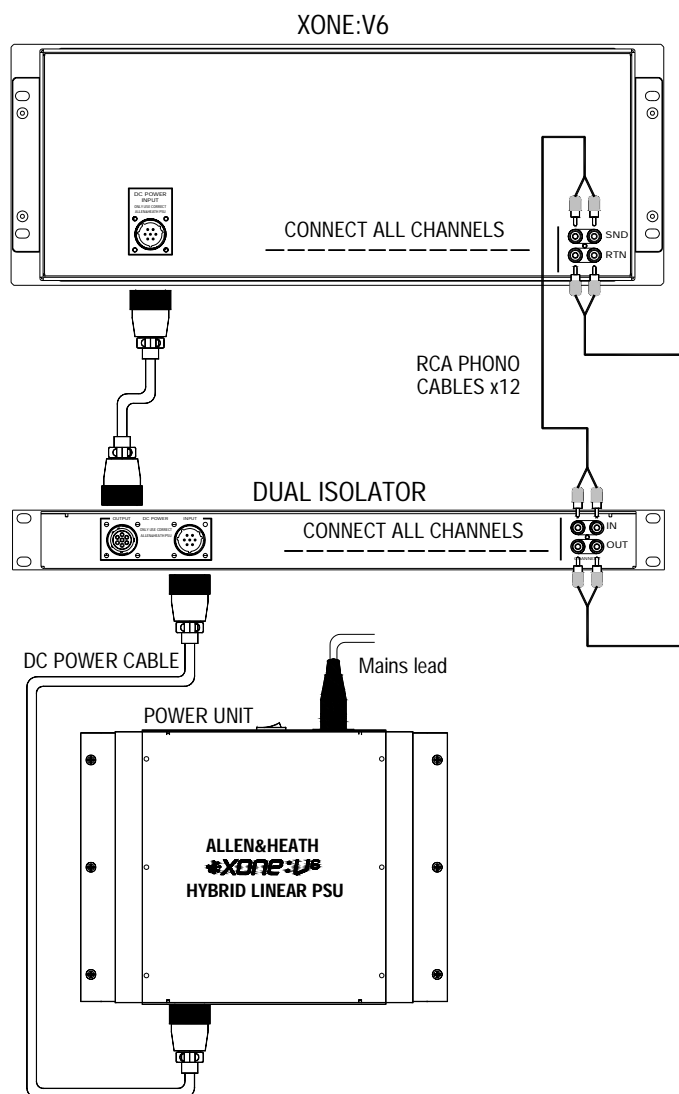
Installing the Options – Mechanical

19" rack mount The EQ Isolator and Crossfader options fit into a standard 19" rack system taking up 1U height. Use M6 bolts with plastic protective cups. These are usually supplied by the rack manufacturer.

Plinth or furniture mount The EQ Isolator and Crossfader options can be mounted in a custom built plinth or other furniture. Use the cutting template details shown here. The dimensions allow clearance for the cover fixing screws. Secure with suitably long M6 bolts and nuts. Use protective cups to protect the console surface.



Connecting the EQ Isolator only

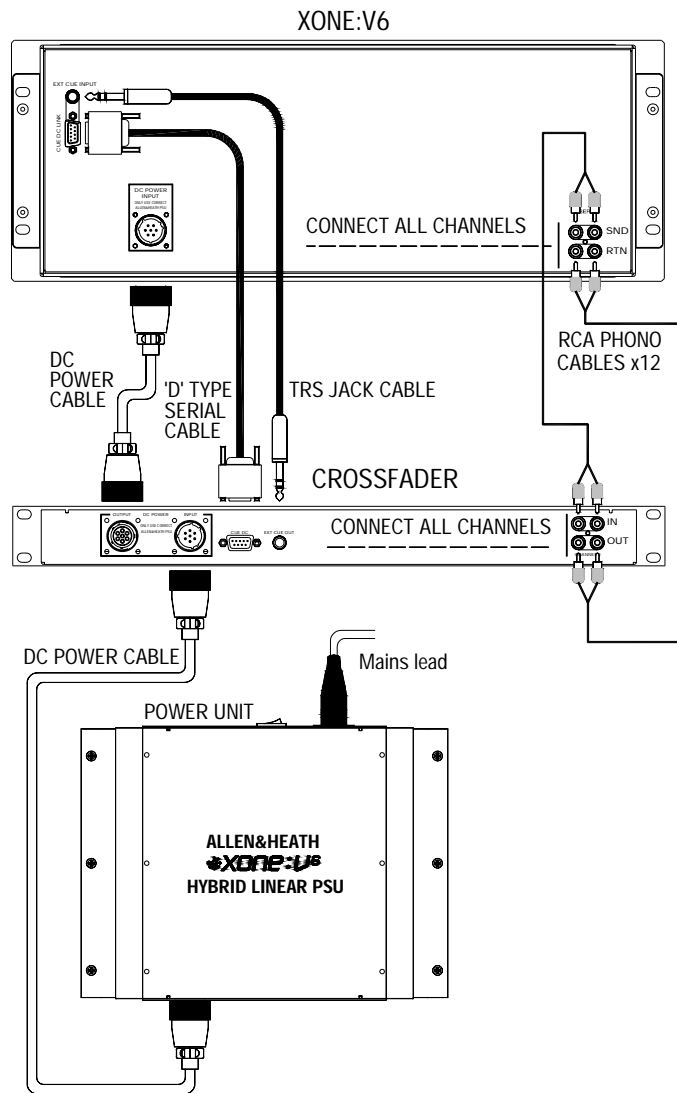


With the **XONE:V6** power unit switched off, unplug its DC power cable and plug it into the EQ Isolator DC INPUT socket. Plug the short DC cable from the DC OUTPUT socket to the console DC input. Tighten the plug locking rings. Check that the power unit is correctly installed as described in the **XONE:V6** user guide AP4975.

Use the 12x stereo RCA phono cables provided to connect each EQ Isolator channel to the equivalent **XONE:V6** channel insert. Plug each stereo insert SEND to the equivalent EQ Isolator IN sockets. Plug the OUT sockets into the insert RETURN. Be careful not to reverse the L and R signals.

Connect mains and switch the power unit on. Check that the +30V, -30V and +6.3V indicators on the power unit are illuminated. The **XONE:V6** meter bulbs and EQ Isolator blue power indicator should light. Use a music source to test that all channels are working correctly and can be selected through the EQ Isolator filters.

Connecting the Crossfader only



With the **XONE:V6** power unit switched off, unplug its DC power cable and plug it into the Crossfader DC INPUT socket. Plug the short DC cable from the DC OUTPUT socket to the console DC input. Tighten the plug locking rings. Check that the power unit is correctly installed as described in the **XONE:V6** user guide AP4975.

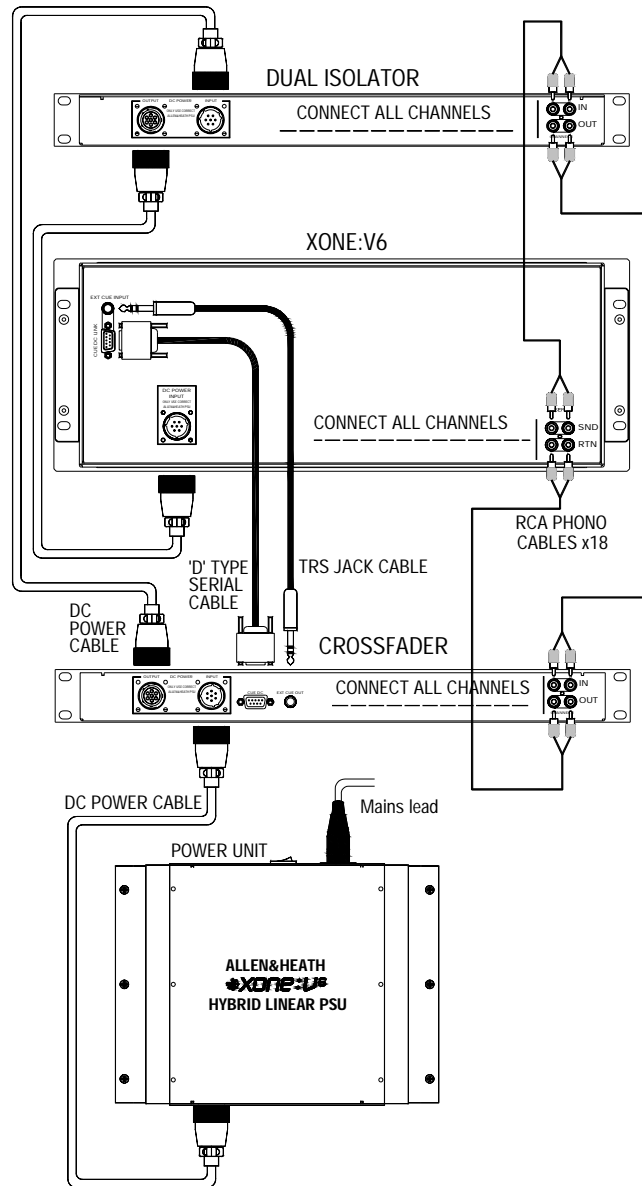
Use the 12x stereo RCA phono cables to connect each Crossfader channel to the equivalent **XONE:V6** channel insert. Plug each stereo insert SEND to the equivalent Crossfader IN sockets. Plug the OUT sockets into the insert RETURN. Be careful not to reverse the L and R signals.

Connect the Crossfader cue system to the **XONE:V6**. Use the 9-pin 'D' cable supplied to link the cue DC logic system. Plug the female end of the 9-pin 'D' cable supplied with the option into the Crossfader CUE DC socket. Plug the male end into the **XONE:V6** CUE DC LINK socket. Tighten the plug locking screws at both ends. Use the 3-pole TRS (stereo) jack cable to link the cue audio. Plug this into the Crossfader EXT CUE OUT and **XONE:V6** EXT CUE IN sockets.

NOTE : For the cue system to work correctly with the Crossfader, the two link cables must be connected and all six channels must be patched into the **XONE:V6** console.

Connect mains and switch the power unit on. Check that the +30V, -30V and +6.3V indicators on the power unit are illuminated. The **XONE:V6** meter bulbs and Crossfader blue power indicator should light. Use a music source to test that all channels are working correctly and can be selected through the crossfader.

Connecting the EQ Isolator and Crossfader



With the **XONE:V6** power unit switched off, unplug its DC power cable and plug it into the Crossfader DC INPUT socket. Plug one of the short DC cables from the DC OUTPUT socket to the EQ Isolator DC INPUT. Plug the other DC cable from the EQ Isolator to the **XONE:V6** console DC input. Tighten the plug locking rings. Check that the power unit is correctly installed as described in the **XONE:V6** user guide AP4975.

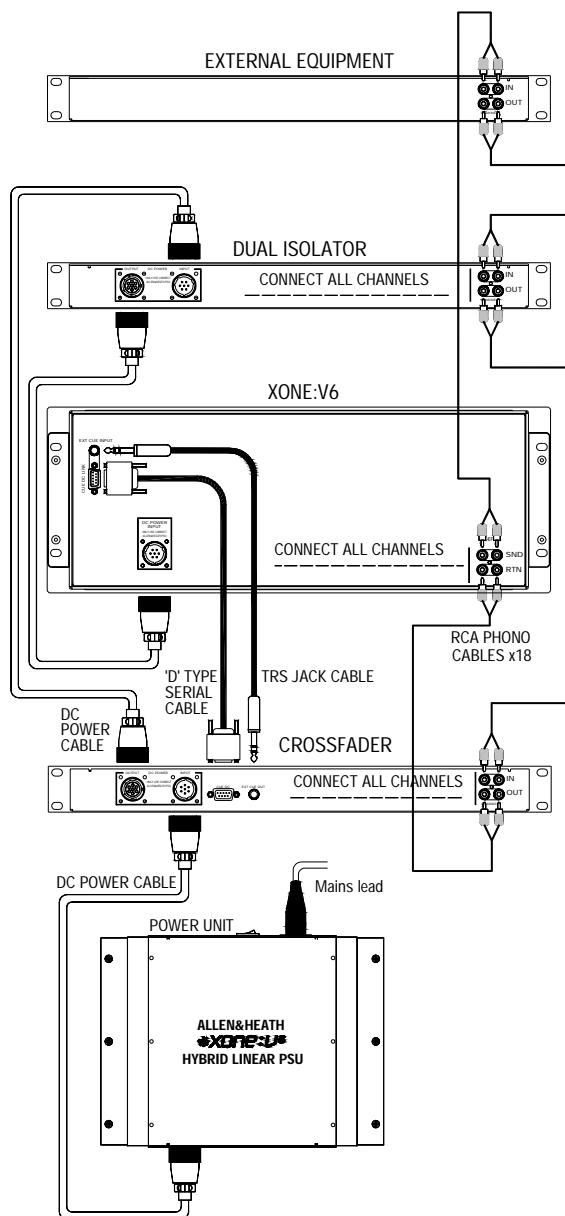
Use 18x of the stereo RCA phono cables provided to patch between the EQ Isolator, the Crossfader and the **XONE:V6** channel inserts as shown. For each of the six channels plug the stereo insert SEND to the equivalent EQ Isolator sockets. Plug the OUT sockets to the Crossfader IN sockets. Plug its OUT sockets to the insert RETURN. Be careful not to reverse the L and R signals.

Connect the Crossfader cue system to the **XONE:V6**. Use the 9-pin 'D' cable supplied to link the cue DC logic system. Plug the female end of the 9-pin 'D' cable supplied with the option into the Crossfader CUE DC socket. Plug the male end into the **XONE:V6** CUE DC LINK socket. Tighten the plug locking screws at both ends. Use the 3-pole TRS (stereo) jack cable to link the cue audio. Plug this into the Crossfader EXT CUE OUT and **XONE:V6** EXT CUE IN sockets.

NOTE : For the cue system to work correctly with the Crossfader, the two link cables must be connected and all six channels must be patched into the **XONE:V6** console. The Crossfader should be the last unit in the chain.

Connect mains and switch the power unit on. Check that the +30V, -30V and +6.3V indicators on the power unit are illuminated. The **XONE:V6** meter bulbs and both options blue power indicators should light. Use a music source to test that all channels are working correctly and can be selected through the filters and crossfader.

Connecting the Options with other Inserted Equipment



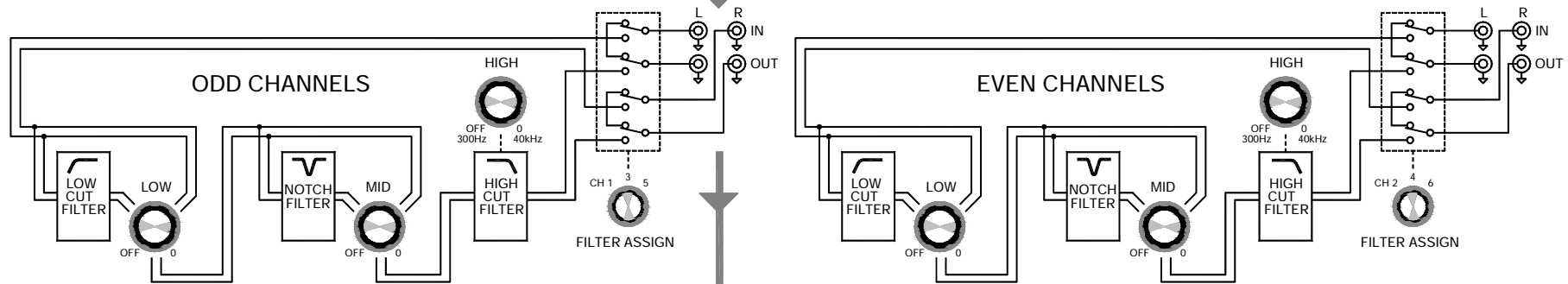
You can use the EQ Isolator and/or Crossfader options even if you already have other equipment such as effects devices, compressors and so on patched into one or more channel inserts. Simply daisy chain the units by connecting the outputs of one to the inputs of the next.

NOTE : If used, the Crossfader should be the last unit in the chain. This ensures that the cue system monitors the signal after the EQ and any inserted processing.

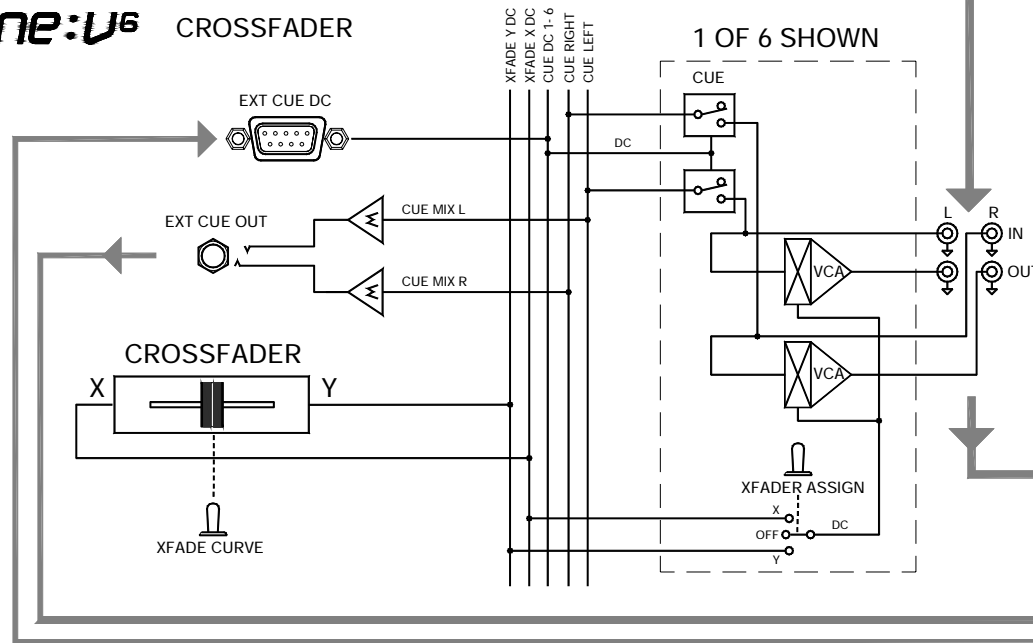
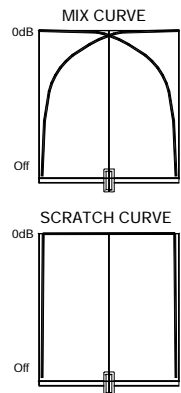
NOTE : For correct performance make sure any inserted equipment is set for unity (0dB) gain and at 0dBu operating level.

NOTE : Use professional grade audio cables. Avoid the use of cheap or domestic grade cables.

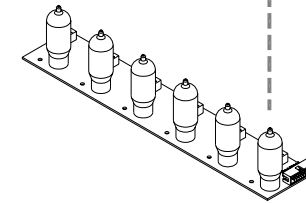
*XONE:V6 DUAL EQ ISOLATOR



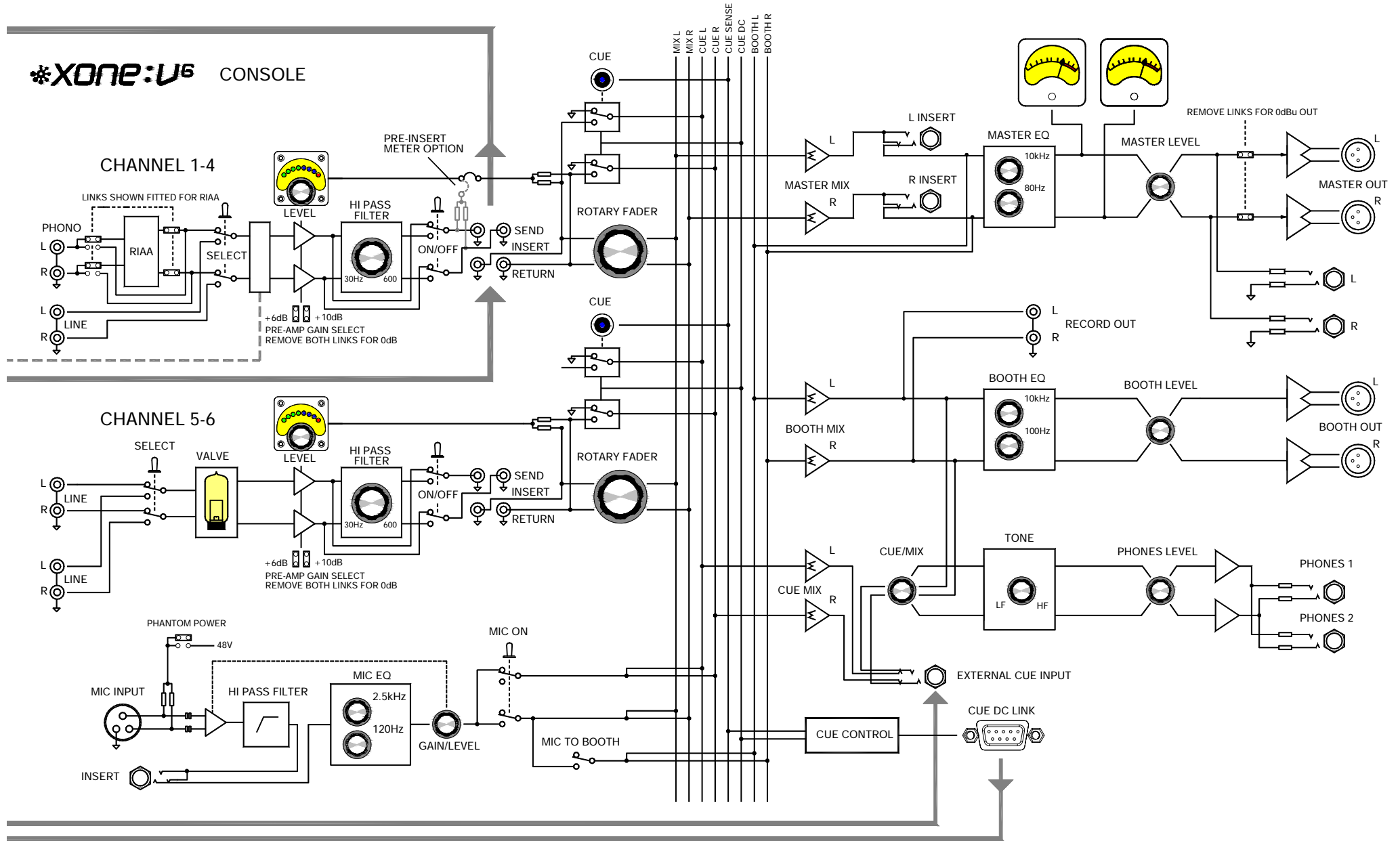
*XONE:V6 CROSSFADER



ALL VALVE OPTION



XONE:V6 CONSOLE



Technical Specification – Dual EQ Isolator

HIGH EQ

Swept high cut filter 12dB/octave
Control sweeps the cut off frequency
Flat response at clockwise position
Cut off variable from 20kHz ('0') to 300Hz ('OFF')

MID EQ

Fixed frequency notch filter
Centre frequency 1.2kHz
Control balances between flat ('0') and filter ('OFF')
Flat response at clockwise position

LOW EQ

Fixed frequency low cut filter 18dB/octave
Cut off frequency 350Hz
Control balances between flat ('0') and filter ('OFF')
Flat response at clockwise position

Frequency Response

All controls '0' (flat) + 0/-1dB 10Hz to 40 KHz

Distortion

THD+N < 0.006% at 0dBu

Crosstalk

Left/Right separation -85dB at 1kHz
Channel crosstalk -100dB at 1kHz

Noise

Residual output noise -102dBu 22Hz - 22kHz

Audio Inputs and Outputs

RCA phono L and R connectors
Operating level 0dBu
Maximum output level +24dBu
Input >10k ohm impedance
Output <75 ohms impedance

Power Supply

Shares **XONE:V6** power unit
DC input and output 7-pin sockets
DC link cable provided

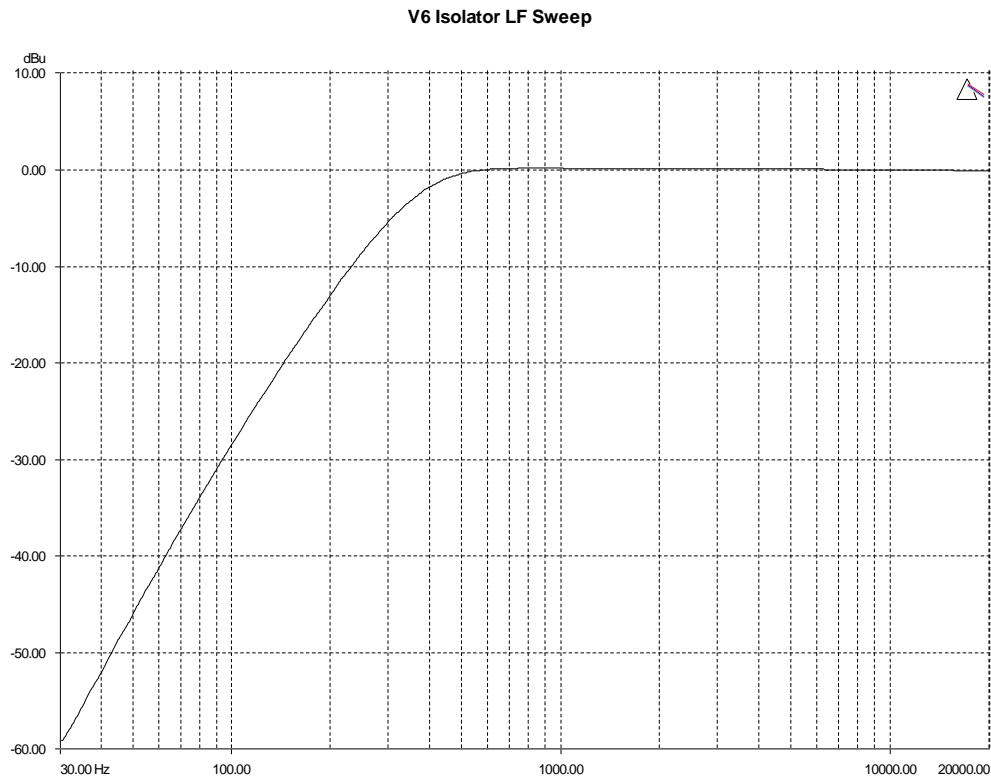
Dimensions

Width 483mm (19")
Height 44mm (1 3/4") 1U
Depth 181mm (7 1/8") from rear of face

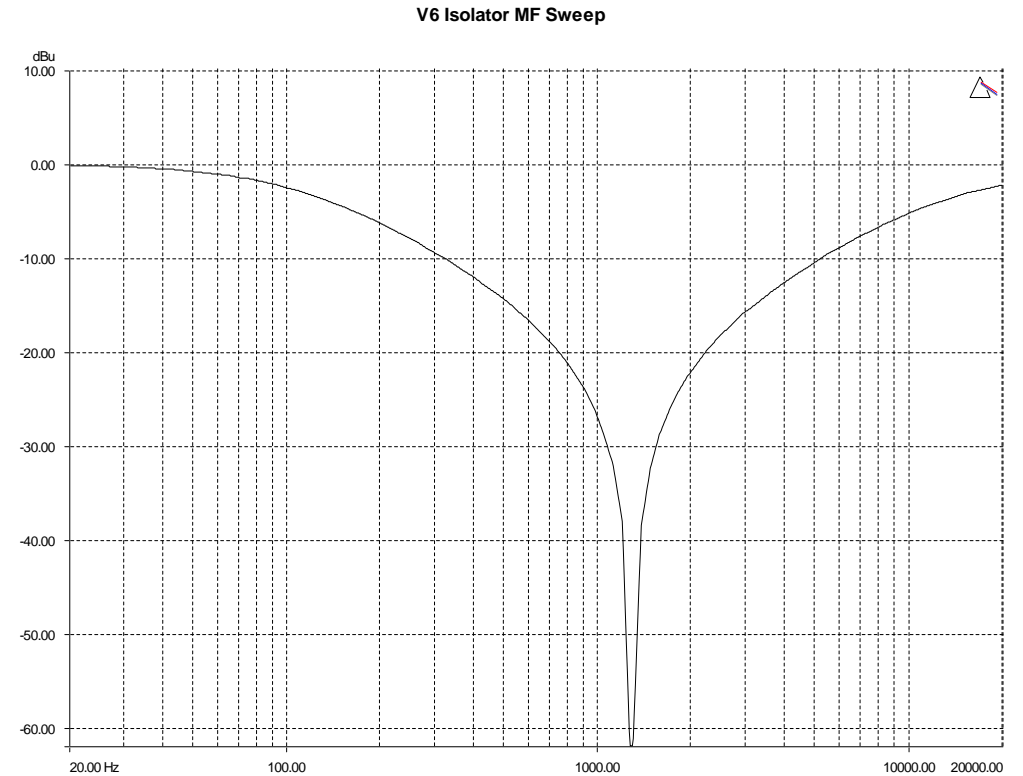
Weight

Unpacked 3.5kg (8lbs)

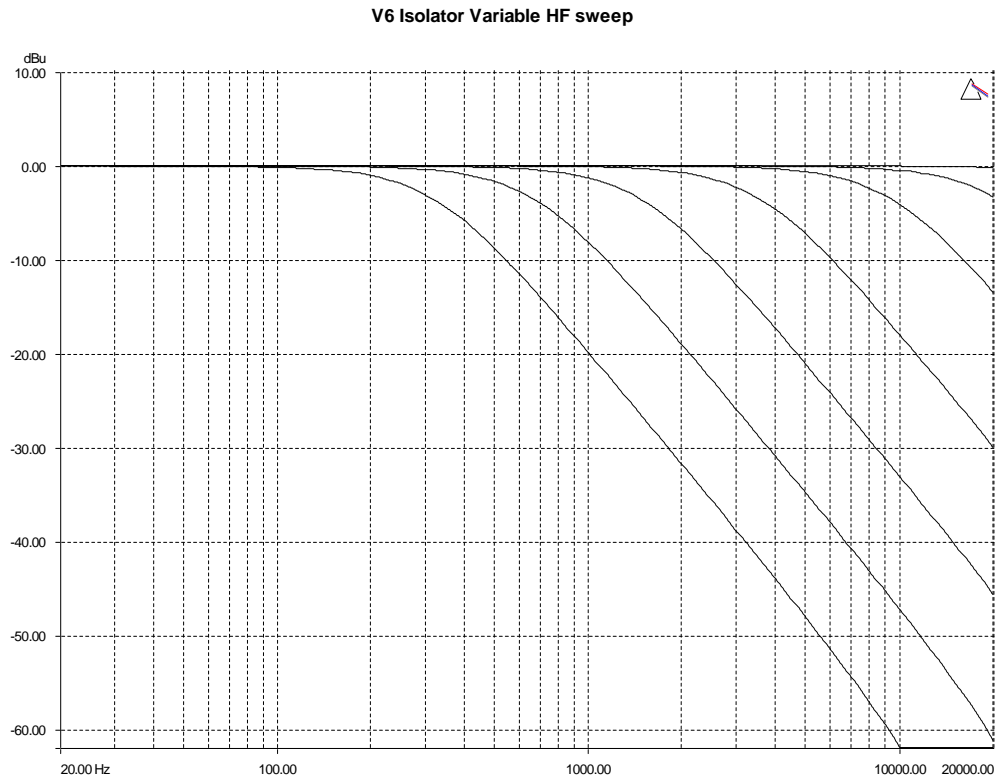
Low Frequency Attenuator This graph shows the response of the LOW control when turned fully anticlockwise (full effect).



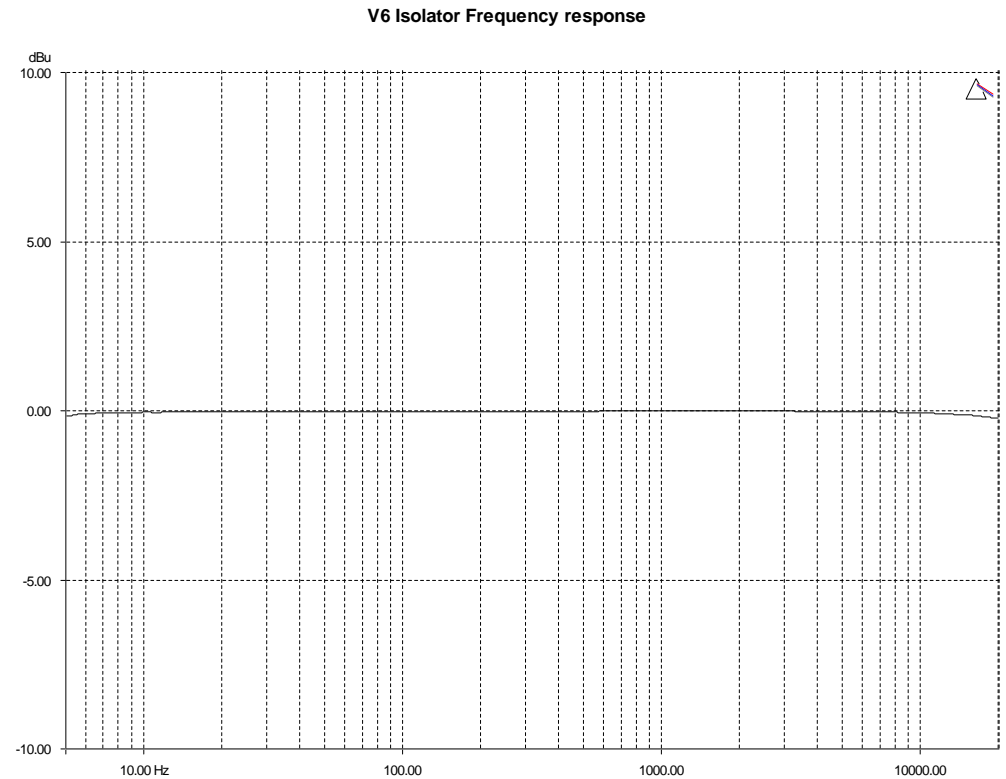
Mid Frequency Attenuator This graph shows the response of the MID control when turned fully anticlockwise (full effect).



High Frequency Attenuator This graph shows the response of the swept HIGH control when turned fully anticlockwise (full effect).



DUAL EQ Isolator frequency response This graph shows the overall frequency response with all controls fully clockwise (flat response).



Technical Specification – Crossfader

Crossfader

Precision Penny& Giles crossfader
Conductive plastic track, sliding bar fader
Selectable curve - Mix or Scratch

Frequency Response

+ 0/-1dB 10Hz to 50 KHz

Distortion

THD+N < 0.006% at 0dBu

Crosstalk

Left/Right separation -85dB at 1kHz
Channel crosstalk -100dB at 1kHz
Crossfader attenuation -80dB

Noise

Residual output noise -97dBu 22Hz - 22kHz

Audio Inputs and Outputs

RCA phono L and R connectors
Operating level 0dBu
Maximum output level +24dBu
Input >10k ohm impedance
Output <75 ohms impedance

Power Supply

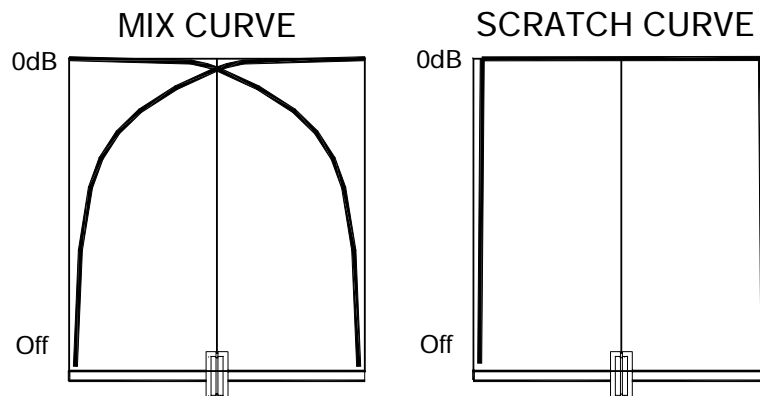
Shares **XONE:V6** power unit
DC input and output 7-pin sockets
DC link cable provided

Dimensions

Width 483mm (19")
Height 44mm (1 3/4") 1U
Depth 181mm (7 1/8") from rear of face

Weight

Unpacked 3.5kg (8lbs)



Crossfader Curve These diagrams illustrate the response of the crossfader as it is moved from one side to the other. The MIX curve has a progressive response with 1.5dB mid position attenuation for smooth fading. The SCRATCH curve has a very fast switch-on with no mid position attenuation.

XONE:V6 Order Codes

XONE:V6/n	XONE:V6 audiophile rotary mixer n = voltage
XONE:V6-EQISO	Dual channel EQ Isolator module for the XONE:V6
XONE:V6-XFADER	Crossfader module for the XONE:V6
XONE:V6-VALVE	All valve option for the XONE:V6
AI4222	Penny & Giles X3000 replacement crossfader
AP4975	XONE:V6 user guide
AP5377	XONE:V6 Options user guide
003-204	Pre-insert meter option kit of parts
AP5557	Pre-insert meter option fitting instructions
AP5295	All valve option fitting instructions